

### Introduction

'Odroid-T' is a project dedicated to delivering Tablet entertainment devices with Android. [HardKernel](#) will sell the Odroid-T devices to developers.

The 'Odroid-T' is a tablet development platform that enables Integrators, Developers and OEMs to create customized applications and Android environment.

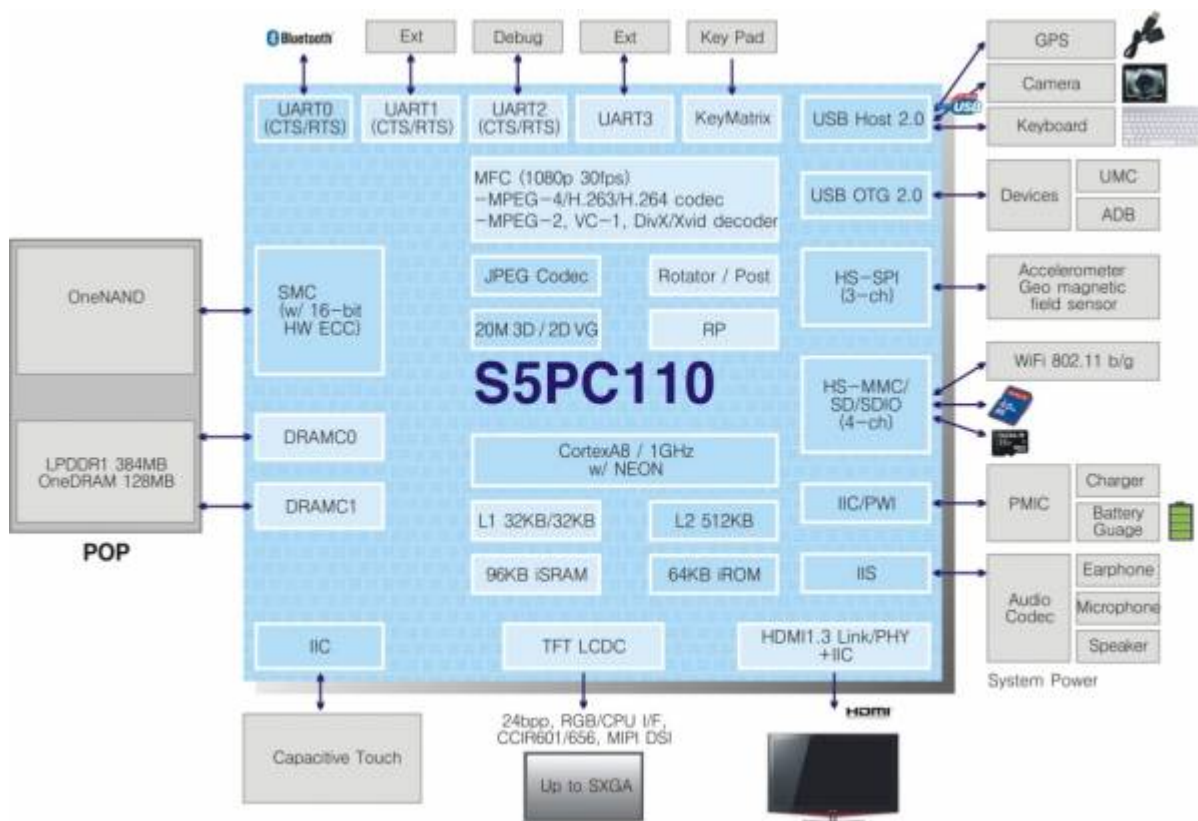
Developers and OEMs can purchase the 'Odroid-T Developer Edition' with Android 2.2 and then download FREE firmware updates in the future.

Please note that the 'Odroid-T' is a development platform and its specifications are subject to change without notice and it may include Beta and Pre-Release software. As such it is not designed for end-users.

### Hardware Information

Full schematics are stored in the Odroid memory card.

### [Block diagram]



### [CPU Board]

CPU : Samsung S5PC110 Cortex-A8 1Ghz with 512KB L2 cache, 3D Accelerator : SGX540 (up to 20M triangles/s and 1000M pixels/s)

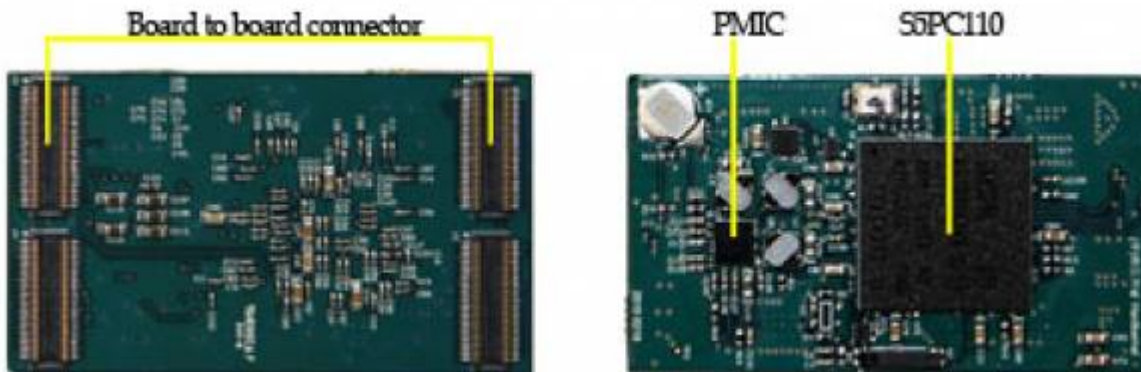
' We found the User's manual of S5PC110 in this link. If this link is broken please let us know. ' [http://pdadb.net/download/samsung\\_s5pc110\\_manual\\_en.rar](http://pdadb.net/download/samsung_s5pc110_manual_en.rar)

Memory : [OneNAND](#) 512MB and Mobile DDR 512MB in POP mounting method.

PMIC : contains 3 Step-down DC/DCs and 9 LODs from Maxim-IC.

ETC: 200pin board-to-board connector for extension, RTC backup capacitor

### CPU Board components



### Board to Board connector location data

[cpu\\_module\\_b2b.zip](#)

[bm\\_f\\_040-ixxb-n15.pdf](#)

This data is useful for designing your own base board. Please consider connector J1 of CPU board should be matching to J1 of Base board.

### Board to Board connector pin map

<rowbgcolor="#FFFE8">'pin#'	'Ball name'	'Function'	'CMT'	'pin#'	'Ball name'	'Function'	'CMT'			
J1-1	-	LDO9	PMIC	J1-50	-	GND	GND			
J1-2	-	LDO9	PMIC	J1-49	-	GND	GND			
J1-3	-	LDO9	PMIC	J1-48	-	GND	GND			
J1-4	XspiMISO[0]	SPI_0_MISO	-	J1-47	XspiMOSI[0]	GPB[3]	-			
J1-5	XspiCSn[0]	SPI_0_nSS	-	J1-46	Xmmc1CLK	SD_1_CLK	-			
J1-6	XspiCLK[0]	SPI_0_CLK	-	J1-45	Xmmc1DATA[1]	SD_1_DATA[1]	-			
J1-7	Xmmc0CDn	SD_0_CDn	-	J1-44	Xmmc0CLK	GPSD_0_CLK	-			
J1-8	Xmmc1DATA[0]	SD_1_DATA[0]	-	J1-43	Xmmc1DATA[3]	SD_1_DATA[3]	-			
J1-9	Xmmc0DATA[1]	SD_0_DATA[1]	-	J1-42	Xmmc1DATA[2]	SD_1_DATA[2]	-			
J1-10	Xmmc0DATA[0]	SD_0_DATA[0]	-	J1-41	Xmmc1CDn	SD_1_CDn	-			
J1-11	Xmmc1CMD	SD_1_CMD	-	J1-40	Xmmc0DATA[3]	SD_0_DATA[3]	-			
J1-12	Xmmc0CMD	SD_0_CMD	-	J1-39	XuCTS[0]	UART_0_CTSn	-			
J1-13	Xmmc0CMD	SD_0_DATA[2]	-	J1-38	XuRTS[0]	UART_0_RTSn	-			
J1-14	XdacOUT[0]	GPXdacOUT[0]	-	J1-37	XuTXD[0]	UART_0_TXD	-			
J1-15	XuRXD[1]	UART_1_RXD	-	J1-36	XuTXD[1]	UART_1_TXD	-			
J1-16	XuRXD[0]	UART_0_RXD	-	J1-35	XuRXD[2]	UART_2_RXD	-			
J1-17	Xmmc3CDn	GPG3[2]	-	J1-34	-	GND	GND			

J1-18	Xmmc3DATA[2]	GPG3[5]	-	J1-33	Xmmc2CLK	SD_2_CLK	-			
J1-19	XpwmTOUT[0]	GPD0[0]	-	J1-32	Xmmc3CLK	GPG3[0]	-			
J1-20	Xmmc3DATA[0]	GPG3[3]	-	J1-31	Xmmc2DATA[3]	SD_2_DATA[3]	-			
J1-21	XuRXD[0]	UART_0_RXD	-	J1-30	Xmmc2DATA[2]	SD_2_DATA[2]	-			
J1-22	XuRXD[0]	UART_0_RXD	-	J1-29	Xmmc2DATA[1]	SD_2_DATA[1]	-			
J1-23	XuRXD[0]	UART_0_RXD	-	J1-28	Xmmc2DATA[0]	SD_2_DATA[0]	-			
J1-24	XuRXD[0]	UART_0_RXD	-	J1-27	Xmmc2CMD	SD_2_CMD	-			
J1-25	XuRXD[0]	UART_0_RXD	-	J1-26	Xmmc2CDn	SD_2_CDn	-			
J2-1	XvVD[5]	LCD_VD[5]	-	J2-50	-	GND	GND			
J2-2	XvVD[17]	LCD_VD[17]	-	J2-49	XhdmITXCP	HDMI_TXCP	-			
J2-3	XvVD[12]	LCD_VD[12]	-	J2-48	XhdmITXCN	HDMI_TXCN	-			
J2-4	XvVD[19]	LCD_VD[19]	-	J2-47	XhdmITX0P	HDMI_TX0P	-			
J2-5	XvVD[11]	LCD_VD[11]	-	J2-46	XhdmITX0N	HDMI_TX0N	-			
J2-6	XvVCLK	LCD_VCLK	-	J2-45	XhdmITX1P	HDMI_TX1P	-			
J2-7	XvVD[7]	LCD_VD[7]	-	J2-44	xhdmITX1N	HDMI_TX1N	-			
J2-8	XvVD[22]	LCD_VD[22]	-	J2-43	xhdmITX2P	HDMI_TX2P	-			
J2-9	XvVD[14]	LCD_VD[14]	-	J2-42	XhdmITX2N	HDMI_TX2N	-			
J2-10	XvVD[15]	LCD_VD[15]	-	J2-41	Xpcm0FSYNC	GPC1[2]	-			
J2-11	XXvVD[21]	LCD_VD[21]	-	J2-40	Xpcm0SIN	GPC1[3]	-			
J2-12	XvVD[23]	LCD_VD[23]	-	J2-39	Xpcm0SCLK	GPC1[0]	-			
J2-13	XvVD[18]	LCD_VD[18]	-	J2-38	Xi2sLRCK	I2S_0_LRCLK	-			
J2-14	XvVD[13]	LCD_VD[13]	-	J2-37	Xpcm0EXTCLK	GPC1[1]	-			
J2-15	XvVD[16]	LCD_VD[16]	-	J2-36	Xpcm0SOUT	GPC1[4]	-			
J2-16	XvVD[6]	LCD_VD[6]	-	J2-35	Xi2s0SDI	I2S_0_SDI	-			
J2-17	XvVD[10]	LCD_VD[10]	-	J2-34	Xi2s0SCLK	I2S_0_SCLK	-			
J2-18	XvVD[9]	LCD_VD[9]	-	J2-33	Xi2s0CDCLK	I2S_0_CDCLK	-			
J2-19	XvVD[19]	LCD_VD[19]	-	J2-32	Xi2s0SDO[0]	I2S_0_SDO[0]	-			
J2-20	XvVD[3]	LCD_VD[3]	-	J2-31	XvVDEN	LCd_VDEN	-			
J2-21	XvVD[2]	LCD_VD[2]	-	J2-30	XvVSYNC	LCD_VSYNC	-			
J2-22	XvVD[20]	LCD_VD[20]	-	J2-29	XvHSYNC	LCD_HSYNC	-			
J2-23	XvVD[1]	LCD_VD[1]	-	J2-28	XEINT[12]	HDMI_CEC	-			
J2-24	XvVD[4]	LCD_VD[4]	-	J2-27	XEINT[13]	HDMI_HPD	-			
J2-25	XvVD[0]	LCD_VD[0]	-	J2-26	-	GND	GND			
J3-1	XspiCSN[1]	SPI_1_nSS	-	J3-50	Xi2c0SCL	I2C0_Scl	-			
J3-2	XspiMOSI[1]	SPI_1_MOSI	-	J3-49	Xi2c0SDA	I2C0_SDA	-			
J3-3	XspiMISO[1]	SPI_1_MISO	-	J3-48	XnWRESET	XnWRESET	-			
J3-4	XEINT[3]	XEINT[3]	-	J3-47	-	JIGON	JIG SW			
J3-5	XspiCLK[1]	SPI_1_CLK	-	J3-46	XRTCCLKO	RTC_CLKOUT	-			
J3-6	XEINT[6]	GPH0[6]	-	J3-45	XPWRRGTON	XPWRRGTON	-			
J3-7	XEINT[8]	GPH1[0]	-	J3-44	XOM[3]	XOM[3]	-			
J3-8	XEINT[0]	GPH0[0]	-	J3-43	-	EXT RST				
J3-9	XOM[1]	XOM[1]	-	J3-42	XEINT[18]	KP_COL[2]	-			
J3-10	XOM[2]	XOM[2]	-	J3-41	XEINT[9]	GPH1[1]	-			
J3-11	XEINT[3]	GPH0[3]	-	J3-40	XEINT[25]	KP_ROW[1]	-			
J3-12	XEINT[20]	KP_COL[4]	-	J3-39	XEINT[1]	GPH0[1]	-			
J3-13	XEINT[23]	KP_COL[7]	-	J3-38	XEINT[2]	GPH0[2]	-			
J3-14	XEINT[10]	GPH1[2]	-	J3-37	XciDATA[1]	CAM_A_DATA[1]	-			
J3-15	XEINT[5]	GPH0[5]	-	J3-36	XEINT[27]	KP_ROW[3]	-			
J3-16	XEINT[30]	KP_ROW[6]	-	J3-35	XEINT[29]	KP_ROW[5]	-			
J3-17	XOM[4]	XOM[4]	-	J3-34	XOM[5]	XOM[5]	-			
J3-18	XEINT[7]	GPH0[7]	-	J3-33	-	LDO4	PMIC			
J3-19	XEINT[16]	XEINT[16]	-	J3-32	-	LDO6	PMIC			
J3-20	XEINT[19]	KP_COL[3]	-	J3-31	-	LDO7	PMIC			
J3-21	XEINT[17]	KP_COL[1]	-	J3-30	at +	J3-26	-	GND	GND	
J4-1	-	GND	GND	J4-50	Xi2c2SCL	I2C2_SCL	-			
J4-2	-	GND	GND	J4-49	XciDATA[6]	CAM_A_DATA[6]	-			
J4-3	-	GND	GND	J4-48	XciDATA[7]	CAM_A_DATA[7]	-			
J4-4	XEINT[21]	KP_COL[5]	-	J4-47	XciDATA[4]	CAM_A_DATA[4]	-			
J4-5	XEINT[24]	KP_ROW[0]	-	J4-46	XciDATA[3]	CAM_A_DATA[3]	-			

J4-6	XEINT[26]	KP_ROW[2]	-	J4-45	XciCLKenb	CAM_A_CLKOUT	-			
J4-7	XEINT[22]	KP_COL[6]	-	J4-44	XciDATA[5]	CAM_A_DATA[5]	-			
J4-8	XEINT[28]	KP_ROW[4]	-	J4-43	XciFIELD	CAM_A_FIELD	-			
J4-9	XciDATA[2]	CAM_A_DATA[2]	-	J4-42	XciHREF	CAM_A_HREF	-			
J4-10	Xi2c1SDA	I2C1_SDA	-	J4-41	XciDATA[0]	CAM_A_DATA[0]	-			
J4-11	XciPCLK	CAM_A_PCLK	-	J4-40	XuhostOVERCUR	XuhostOVERCUR	-			
J4-12	Xi2c1SCL	I2C1_SCL	-	J4-39	XuotgDP	XuotgDP	-			
J4-13	XpwmTOUT[2]	GPD0[2]	-	J4-38	XuotgDM	XuotgDM	-			
J4-14	-	GND	GND	J4-37	XuhostPWREN	XuhostPWREN	-			
J4-15	XciVSYNC	CAM_A_VSYNC	-	J4-36	XuotgDRVVBUS	XuotgDRVVBUS	-			
J4-16	XuotgID	XuotgID	-	J4-35	XuRXD[2]	UART_2_RXD	-			
J4-17	XuotgVBUS	XuotgVBUS	-	J4-34	XuhostDP	XuhostDP	-			
J4-18	XuRXD[3]	UART_3_RXD	-	J4-33	XuhostDM	XuhostDM	-			
J4-19	XadcAIN[7]	AIN[7]	-	J4-32	Xi2c2SDA	I2C2_SDA	-			
J4-20	XadcAIN[6]	AIN[6]	-	J4-31	XuTXD[2]	UART_2_TXD	-			
J4-21	XjTRSTn	XjTRSTn	-	J4-30	XuTXD[3]	UART_3_TXD	-			
J4-22	XjTDI	XjTDI	-	J4-29	XadcAIN[9]	AIN[9]	-			
J4-23	XjTDO	XjTDO	-	J4-28	XadcAIN[8]	AIN[8]	-			
J4-24	-	GND	GND	J4-27	XjTCK	XjTCK	-			
J4-25	-	GND	GND	J4-26	XjTMS	XjTMS	-			

**[Base Board]**

LCD : 10.1inch 1366x768 resolution with 18bit LVDS interface

(Activated resolution is 1360x768 due to limitation of GPU)

Touch screen : Capacitive dual point touch input

USB2.0 HS Host : Connect various external accessories such as GPS, camera, keyboard, external HDD, etc

MicroSD Card Slot : 2Gbyte T-flash(removable) memory card for system area of Boot Loader, Kernel and Android.

SDHC Card Slot : 4Gbyte Standard SDHC card for user storage

Mini HDMI : Standard type-C HDTV, support up to 1920 x 1080 resolution

IO(TTA20) : USB, Battery charging and Serial port for system monitoring

WiFi/BT Combo Module : Marvell 8686 & CSR BC4-ROM

Audio CODEC : WM8991 is a highly integrated low power hi-fi CODEC from Wolfson

Acceleration Sensor: Digital 3-axial acceleration sensor from Bosch Sensortec

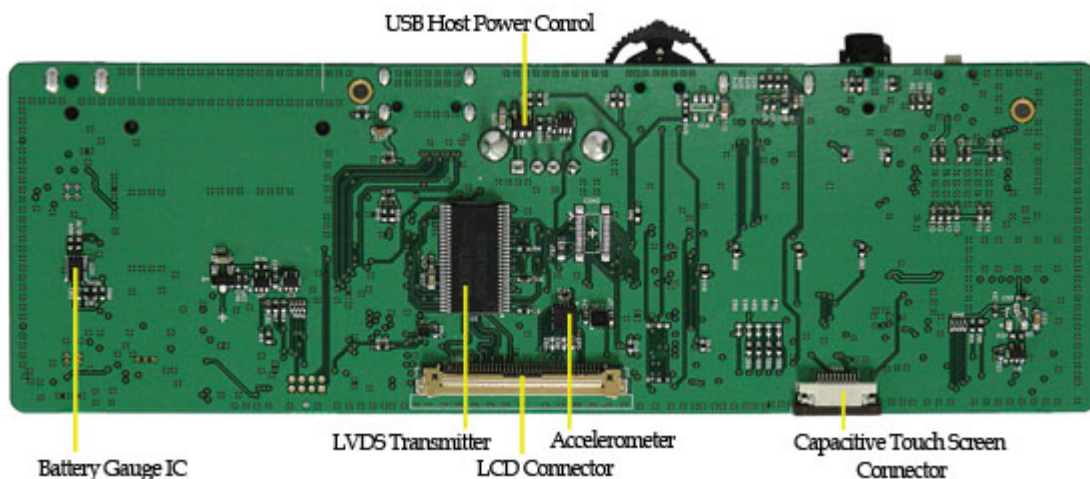
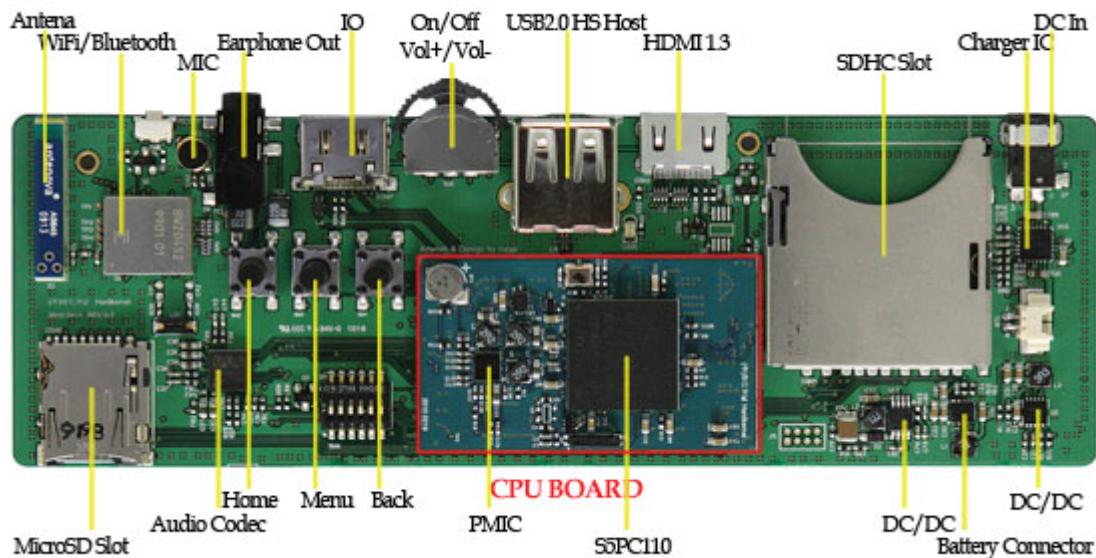
Geomagnetic Sensor: Digital 3-axial geomagnetic sensor(e-compass) from Yamaha corporation

Power : Charger with power-path control, DC/DC for wireless devices, Step-up DC/DC for LCD-backlight/USB-host

LVDS transmitter : converts RGB data into LVDS(Low Voltage Differential Signaling) data streams.

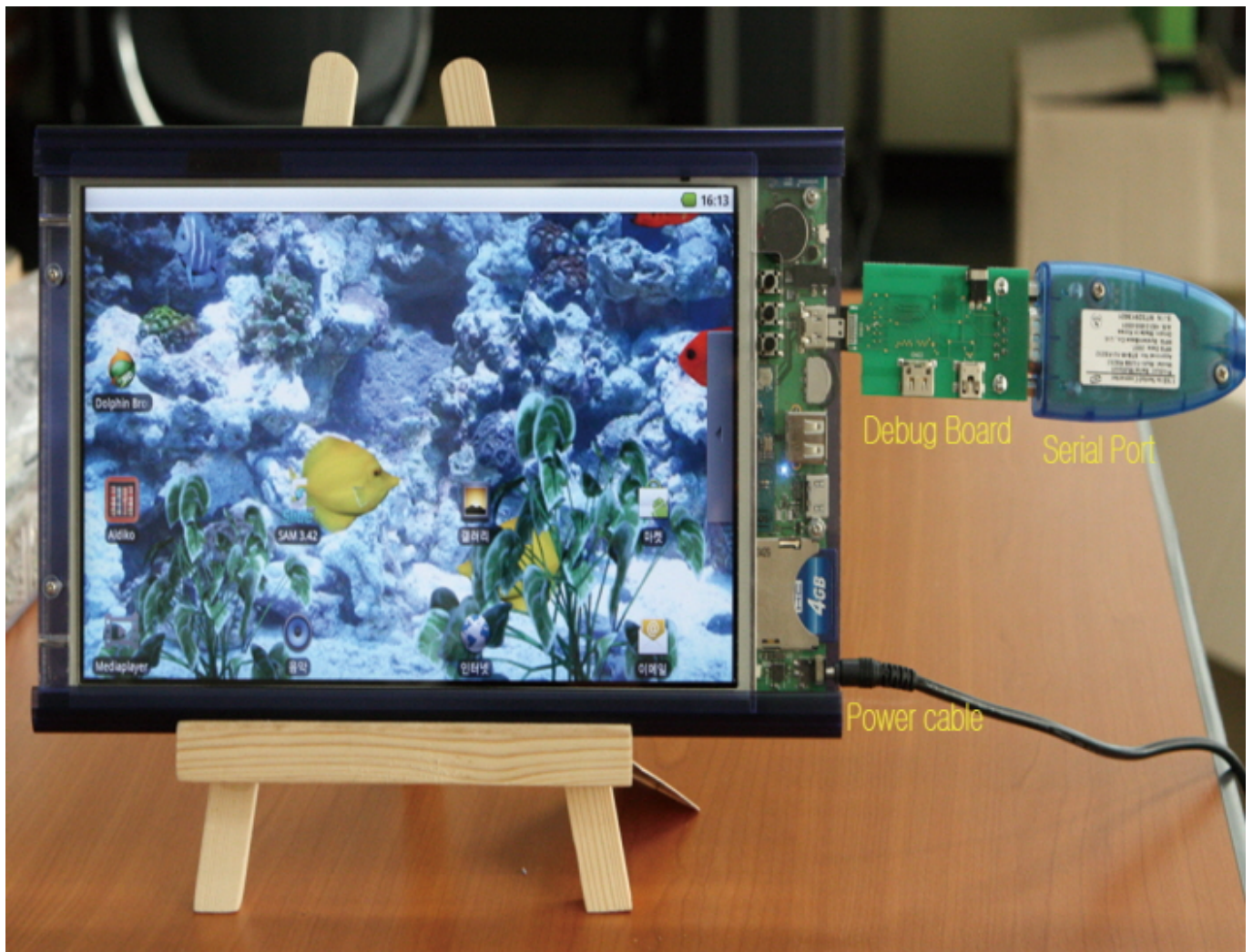
### Base Board components

\* button description is wrong in this picture. Back-Menu-Home is right.



\* LCD datasheet. [lp101wh1-tlb1\\_final\\_cas\\_20090206.pdf](http://lp101wh1-tlb1_final_cas_20090206.pdf)

= Development Setup = 'Caution: To use the debug board, user must connect the DC power supply.'



To change the kernel or root file system, T-flash(micro-SD) should be removed and connected to host PC.



= T-flash sector map for Odroid-S & T = Odroid-T has 2Gbyte T-flash(removable) memory card for system area. Assume it has 3,862,528 blocks(sectors) and each block has 512bytes.

<rowbgcolor="#FFFFE8"> 'Area Name'	'Size in bytes'	'From(sector #)'	'To(Sector #)'	'Partition Name'
Reserved	584M	2666310	3862527	
EXT4 for Android data	1024MB	563518	266309	mmcblkp2
EXT4 for Android system	256MB	34038	563517	mmcblkp1
Reserved	9MB	15409	34037	
RAM disk	3MB	9265	15408	
Linux Kernel	4MB	1073	9264	
U-boot BL2	512KB	57	1072	
U-boot Envi. variables	16KB	25	56	
U-boot BL1	8KB	9	24	
Key code(Secure boot)	4096	1	8	
Partition table / MBR	512	0	0	

= T-flash sector map for Odroid-7 = Odroid-7 has 4Gbyte T-flash(removable) memory card for system area. Assume it has 7,952,176 blocks(sectors) and each block has 512bytes.

<rowbgcolor="#FFFFE8"> 'Area Name'	'Size in bytes'	'From(sector #)'	'To(Sector #)'	'Partition Name'
------------------------------------	-----------------	------------------	----------------	------------------

Reserved	20MB	7911944	7952175	
FAT32 for Storage	3GB	1614914	7911943	mmcblkp1
EXT4 for Android data	512MB	563518	1614913	mmcblkp3
EXT4 for Android system	256MB	34038	563517	mmcblkp2
Reserved	9MB	15409	34037	
RAM disk	3MB	9265	15408	
Linux Kernel	4MB	1073	9264	
U-boot BL2	512KB	57	1072	
U-boot Envi. variables	16KB	25	56	
U-boot BL1	8KB	9	24	
Key code(Secure boot)	4096	1	8	
Partition table / MBR	512	0	0	

= Recovery utility = If your Odroid-T file system is broken or damaged, you can recover the T-flash card with this utility.

[<http://dev.odroid.com/projects/odroid-t/download>]

Unplug your T-flash from ODROID-T and connect it to your PC.

Note: This software is compatible with only Windows-XP. Perform enforcement the compatibility mode with Windows-Vista or Windows-7.

= ADB USB driver for Windows = The Windows XP/VISTA ADB device driver for application developers can be found here.

[[http://com.odroid.com/sigong/nf\\_file\\_board/nfile\\_board\\_view.php?keyword=&tag=&bid=22](http://com.odroid.com/sigong/nf_file_board/nfile_board_view.php?keyword=&tag=&bid=22)]

= User's manual =

For Odroid-S users. [user\\_manual\\_eng\\_odroids.pdf](#)

For Odroid-T users. [user\\_manual\\_eng\\_odroidt.pdf](#)

For Odroid-7 users. [user\\_manual\\_eng\\_odroid7.pdf](#)

= ODROID-T & -S & -7 & -E7 Uboot =

\* For the Uboot compile [HowTo](#), refer below link. [U-Boot Compile how to](#)

[<http://dev.odroid.com/projects/odroid-t/wiki/UbootPage> UBoot\_Compile\_HowTo]

= ODROID-T & -S & -7 & -E7 Linux Kernel =

\* For the Linux Kernel compile [HowTo](#), refer below link.

[<http://dev.odroid.com/projects/odroid-t/wiki/KernelPage> Kernel\_Compile\_HowTo]



# ODROID-T & -S & -7(froyo) Android

\* For the Android compile [HowTo](#), refer below link.

```
[http://dev.odroid.com/projects/odroid-t/wiki/AndroidPage  
Android_Compile_HowTo]
```

# ODROID-A & -7 & -E7 & -PC(gingerbread) Android

\* For the Android compile [HowTo](#), refer below link.

[Android compile how to](#)

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Last update: **2017/06/01 10:28**

